

New records of jumping plant-lice from Slovenia with description of *Bactericera lyrata* sp. n. (Hemiptera: Psylloidea)

Gabrijel SELJAK¹, Igor MALENOVSKÝ² & Pavel LAUTERER^{2, 3}

¹ Agricultural and Forestry Service Nova Gorica, Laboratory for Entomology, Pri hrastu 18, SI-5000 Nova Gorica, Slovenia. E-mail: gabrijel.seljak@kvz-ng.si

² Moravian Museum, Department of Entomology, Hviezdoslavova 29a, CZ-627 00 Brno, Czech Republic. E-mail: imalenovsky@mzm.cz

³ E-mail: ento.laut@volny.cz

New records of jumping plant-lice from Slovenia with description of *Bactericera lyrata* sp. n. (Hemiptera: Psylloidea). - *Bactericera lyrata* sp. n. (Triozidae) is described from Slovenia based on the morphology of adults. The new species is closely related to *Bactericera reuteri* (Šulc) and *B. modesta* (Foerster) from which it differs mainly in the coloration of body and antenna, the fore wing shape, venation and spinulation, the size of genal cones, and the structure of male paramere and female terminalia. Host plant and larvae are so far unknown. Records of following jumping plant-louse species, new to the fauna of Slovenia, are shortly discussed: *Cacopsylla nigrita* (Zetterstedt), *Craspedolepta bulgarica* Klimaszewski, *Megagonoscena gallicola* Burckhardt & Lauterer, *Trioza abdominalis* Flor, *T. laserpitii* Burckhardt & Lauterer, and *T. megacerca* Burckhardt. *Megagonoscena gallicola* is also reported for the first time from Croatia and Italy. The presence of *Trioza ilicina* (De Stefani Perez) in Slovenia is confirmed based on recent records of larvae. Currently, 107 species of Psylloidea are known to occur in Slovenia.

Keywords: *Bactericera* - Triozidae - Psyllidae - taxonomy - new species - distribution - Slovenia - Croatia - Italy.

INTRODUCTION

Jumping plant-lice or psyllids are a relatively small group of phytophagous insects with the greatest diversity in the tropical and southern temperate zones. From central Europe, ca. 190 species are known most of which have very restricted host-plant ranges (Burckhardt, 2002) and approximately 350 species occur in the Mediterranean area and eastern Europe (Burckhardt, 2004).

Although the knowledge of the taxonomy of central European Psylloidea can probably be considered as fairly complete, several recent revisions revealed the existence of cryptic species and demonstrated the need of a detailed approach in critical groups (e.g. Burckhardt & Lauterer, 2002a, b; Lauterer & Burckhardt, 2004). One of the taxonomically most problematic groups within the European Psylloidea is the trioziid genus *Bactericera* Puton, 1876 where morphological differences between closely related species are often subtle (e.g. Hodkinson, 1981). *Bactericera* was rede-

fined by Burckhardt & Lauterer (1997) who also provided a list of the 121 species known worldwide, 23 of which occur in central Europe. They are associated with several plant families, particularly Salicaceae, Rosaceae, Asteraceae, Apiaceae and Liliaceae.

Until recently, Slovenia was poorly explored with respect to the fauna of Psylloidea. The available information on the distribution of psyllids in Slovenia has been summarized and completed with additional data by Seljak (2006). Despite this effort, much faunistic and systematic work on the group is still needed. This has been confirmed also by recent field collections which resulted in several interesting findings, including a previously unknown species of *Bactericera*. The aim of this paper is to describe the new species, as well as to report six other species of Psylloidea for the first time from Slovenia. With this, the number of psyllid species recorded from Slovenia increases to 107.

MATERIAL AND METHODS

All the material has been collected by the first author during field trips in Slovenia in 2005-2007. The location of each collecting site is indicated in the list of examined material by the code of a corresponding 10x10 km quadrant in the Universal Transverse Mercator coordinate system (UTM, Fig. 22) which is given in parentheses.

The examined specimens are dry- and slide-mounted and they are deposited in the following collections:

- GSNG private collection of Gabrijel Seljak, Nova Gorica, Slovenia;
 MHNG Muséum d'histoire naturelle, Genève, Switzerland;
 MMBC Moravian Museum, Brno, Czech Republic;
 PMSL Slovenian Museum of Natural History, Ljubljana, Slovenia.

The morphological terminology follows Hollis (1984) and Ossiannilsson (1992). The following abbreviations are used in the descriptions and tabs. 1-2:

- AL antenna length;
 BL total body length (including fore wings);
 CuH height of the cell cu_1 on fore wing;
 CuW width of the cell cu_1 on fore wing;
 FL female proctiger length;
 GL genal cone length;
 HW head width;
 ML length of the vein M on fore wing (line between trifurcation of $R+M+Cu_1$ stem and bifurcation of M);
 $M_{1+2}L$ length of the vein M_{1+2} on fore wing;
 $M_{3+4}L$ length of the vein M_{3+4} on fore wing;
 PL male paramere length;
 RsL length of the vein Rs on fore wing;
 SL female subgenital plate length;
 VL vertex length;
 WL fore wing length;
 WW fore wing width.

TABLE 1. Measurements (in mm) of fore wing characters in *Bactericera lyrata* and related species. Mean values are given in parentheses, M and R indicate differences statistically significant at $P < 0.001$ between *B. lyrata* and *B. modesta*, and *B. lyrata* and *B. reuteri*, respectively (t-test for independent samples). Differences between males and females were not significant in any character ($P > 0.05$).

Species	N	WL	WW	Rsl	ML	M ₁₊₂ L	M ₃₊₄ L	CuW	CuH
<i>B. lyrata</i>	7 ♂,	2.66-2.91	0.93-1.15	1.35-1.60	1.60-1.80	0.34-0.46	0.21-0.30	0.35-0.46	0.21-0.28
	13 ♀	(2.77) ^{MR}	(1.04)	(1.47) ^M	(1.71) ^{MR}	(0.42) ^{MR}	(0.27) ^{MR}	(0.41) ^M	(0.24) ^R
<i>B. modesta</i>	8 ♂,	2.27-2.99	0.89-1.21	1.09-1.61	1.21-1.63	0.38-0.65	0.25-0.47	0.38-0.59	0.20-0.38
	13 ♀	(2.54)	(1.01)	(1.01)	(1.42)	(0.50)	(0.35)	(0.46)	(0.26)
<i>B. reuteri</i>	8 ♂,	2.40-2.84	0.99-1.18	1.31-1.72	1.31-1.64	0.44-0.62	0.33-0.49	0.35-0.48	0.22-0.38
	7 ♀	(2.58)	(1.08)	(1.45)	(1.43)	(0.53)	(0.41)	(0.41)	(0.29)

TABLE 2. Ratios of fore wing characters in *Bactericera lyrata* and related species. Mean values are given in parentheses, M and R indicate differences significant at $P < 0.001$ between *B. lyrata* and *B. modesta*, and *B. lyrata* and *B. reuteri*, respectively (t-test for independent samples).

Species	WL/WW	Rsl/WL	ML/WL	Rsl/ML	M ₁₊₂ L/WL	M ₃₊₄ L/WL	M ₁₊₂ L/M ₃₊₄ L	CuW/CuH
<i>B. lyrata</i>	2.41-2.87	0.49-0.58	0.58-0.65	0.80-0.99	0.13-0.17	0.08-0.11	1.41-1.73	1.46-1.92
	(2.67) ^{MR}	(0.53)	(0.62) ^{MR}	(0.86) ^R	(0.15) ^{MR}	(0.10) ^{MR}	(1.55) ^R	(1.71) ^R
<i>B. modesta</i>	2.40-2.73	0.45-0.57	0.52-0.61	0.88-1.06	0.16-0.22	0.10-0.16	1.32-1.62	1.45-2.10
	(2.54)	(0.51)	(0.55)	(0.93)	(0.20)	(0.13)	(1.46)	(1.76)
<i>B. reuteri</i>	2.26-2.47	0.50-0.61	0.51-0.60	0.93-1.14	0.17-0.24	0.13-0.19	1.22-1.37	1.06-2.09
	(2.39)	(0.56)	(0.55)	(1.01)	(0.20)	(0.16)	(1.29)	(1.40)

Measurements were made from fresh or dry-mounted (AL, BL, GL, HW) and temporarily or permanently slide-mounted specimens (all measurements on fore wings and male and female terminalia).

RESULTS

Bactericera lyrata sp. n.

Figs 1,4,7-11,14,17-19

MATERIAL EXAMINED. Holotype ♂, **Slovenia:** Vogrsko (Dombrava), 50 m, 13°42'E, 45°54'N, UTM: UL98, 7 October 2007, G. Seljak leg. Dry-mounted (PMSL).

Paratypes. **Slovenia:** same data as holotype but 13 September 2005 (1 ♂), 10 June 2006 (2 ♂, 2 ♀), 8 August 2007 (2 ♂, 7 ♀), and 7 October 2007 (7 ♂, 6 ♀); Prvačko polje (UL98), 5 August 2005 (1 ♂); Nova Gorica (UL99), 11 July 2001 (2 ♂); Poreče pri Podnanosu (VL27), 17 July 2005 (2 ♂, 3 ♀) and 20 June 2006 (1 ♀); Škocjanski zatok (VL04), 24 September 2005 (2 ♂, 1 ♀); Velike Žablje (VL18), 8 August 2007 (1 ♀). Dry- and slide-mounted (GSNG, MHNG, MMBC, PMSL).

DESCRIPTION: *Adult. Colour:* In summer specimens, head, thorax, abdominal sternites and terminalia almost uniformly reddish to orange brown, abdominal tergites dark brown. In overwintering specimens, body dark brown with paler longitudinal streaks on thoracic dorsum. Genal cones reddish to black. Antenna with segments 1–2 ochreous to black, segments 3–5 white to bright yellow, segment 6 usually white basally and dark brown to black in apical half or third (rarely entirely dark brown), segments 7–10 entirely black (Fig. 9). Fore and mid legs dark brown to black, femora lighter ventrally; metafemur entirely reddish to partly dark brown or black dorsally, metatibia light ochreous to dark brown, metatarsus infuscated. Fore wing membrane transparent, clear or with a slight honey-yellow tinge. Hind wing membrane clear, narrowly dark brown basally along the anal vein.

Morphology: Head as broad as mesoscutum; posterior margin slightly concave. Genal cones relatively small, about three fifths length of vertex, blunt apically, inner margins slightly diverging (Fig. 4). Antenna with a single rhinarium in subapical position on each of segments 4, 6, 8 and 9; antennal segment 3 narrow, not thickened; antennal segment 10 with terminal setae markedly differing in length (Fig. 10). Metatibia with 1+2 apical spurs, meracanthus strongly protruding, ca. 0.1 mm long. Fore wing (Fig. 1) widest in the middle, costal margin regularly arched throughout, apex clearly angular; vein Rs relatively short, slightly sinuous, reaching costal margin proximally of or at the line of branching of vein M; veins M_{1+2} and M_{3+4} short, cell m_1 small. Surface spinulation of fore wing membrane in females usually distinct, with spinules present in all fields leaving spinule-free bands; spinulation in males very fine and indistinct or absent. Male and female terminalia as in figs. 7-8 and 11-13. Male proctiger with long, narrow and apically pointed posterior lobes, directed slightly upwards (Fig. 7). Paramere covered with long setae, especially on inner and posterior surfaces; in lateral view, narrowing to apex, anterior margin sinuate, strongly concave in apical third, apex narrow, acute, oriented forwards (Fig. 11); in posterior view, slightly S-shaped and apically tapering, apical fourth inflated on inner side, apex acute and strongly diverging outwards (Fig. 14). Distal segment of aedeagus short, with apical dilation straight and narrow, slightly inflated on dorsal side; sclerotised end tube of ductus ejaculatorius short, slightly sinuous (Fig. 8). Female proctiger blunt apically,

circumanal pore ring composed of two rows of uneven pores (Fig. 17). Female subgenital plate covered with long setae; in lateral view, with an apical tooth directed slightly upwards; in ventral view subacute. Apex of ventral valvulae with two distinct lateral teeth (Fig. 18).

Measurements and ratios (7♂ and 13♀): BL 3.3-3.6 mm; WL 2.66-2.91 mm; HW 0.59-0.66 mm; AL 1.14-1.26 mm; AL/HW 1.81-2.07; WL/HW 4.36-4.65; VL 0.20-0.22 mm; GL 0.13-0.15 mm; PL 0.19-0.22 mm; FL 0.35-0.40 mm; SL 0.24-0.26 mm. Spinules on fore wing membrane 17.5 µm apart (mean of 50 measurements, min-max: 12.5-22.5 µm) in the middle of fore wing and more densely arranged in cell cu₂ (12.6 µm; 9.5-16.2 µm). See tabs. 1-2 for additional measurements and ratios.

Larva: unknown.

Egg (Fig. 19): Oblong oval with long pedicel (dissected from female abdomen).

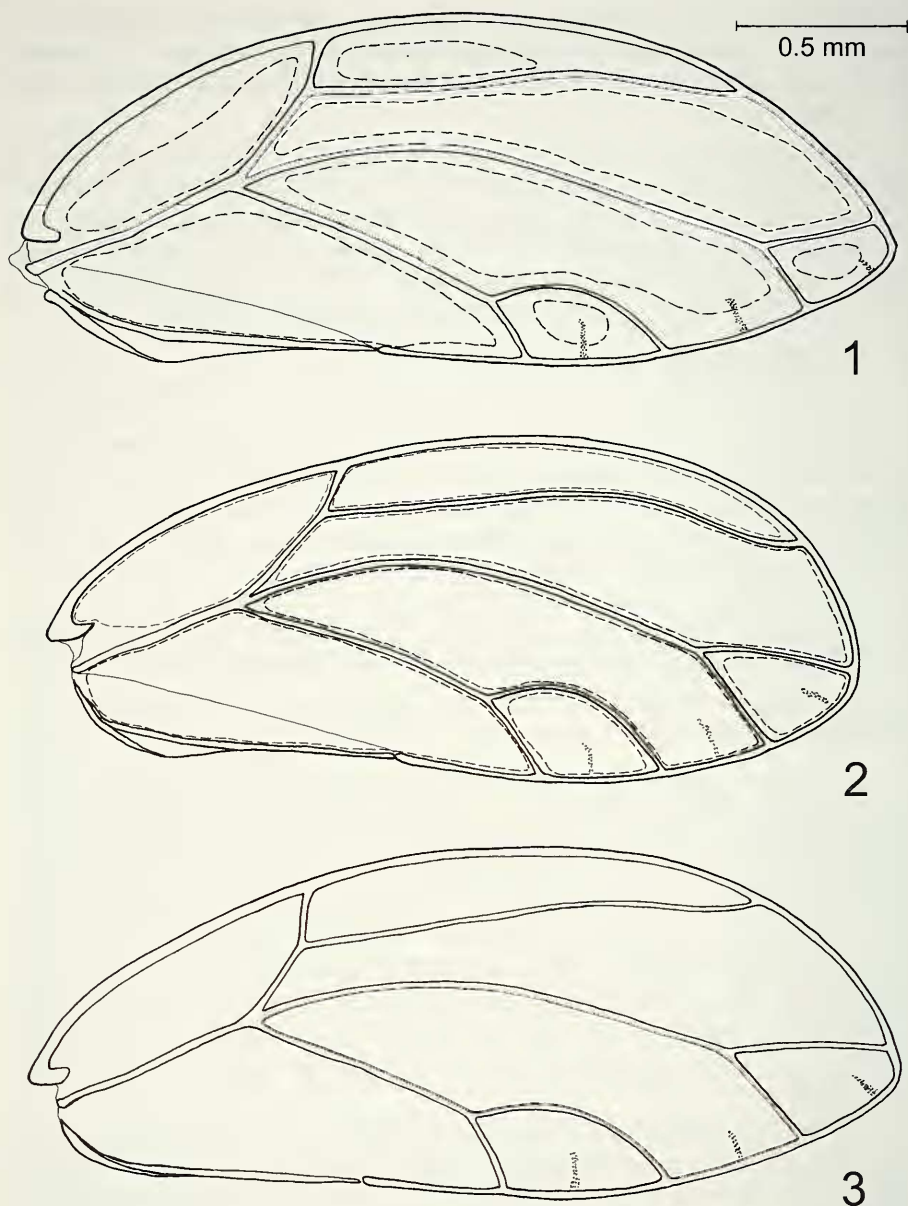
HOST PLANT AND BIOLOGY: Unknown, but based on phylogenetic considerations possibly living on Rosaceae (closest relatives are associated with various rosaceous genera). *B. lyrata* appears to be a meso- to hygrophilous species. Adults have always been collected along drainage channels rich in *Potentilla reptans* and *Sanguisorba officinalis*. There are at least two generations a year.

DISTRIBUTION: *B. lyrata* is known only from a few localities in the submediterranean part of Slovenia (Fig. 22), confined to the lowland between 0 and 150 m a. s. l.

ETYMOLOGY: From the Latin *lyratus* = lyre-shaped, referring to the lyre-shaped parameres in posterior view.

COMMENTS: Although no synapomorphies clearly defining monophyletic groups within the genus *Bactericera* have been recognised so far and the phylogenetic significance of many characters is difficult to assess (Burckhardt & Lauterer, 1997), we suggest that *B. lyrata* belongs to a group of *Bactericera* species distributed in the Palaearctic region and associated with plants of the family Rosaceae. The group includes also *B. acutipennis* (Zetterstedt, 1828), *B. bohémica* (Šulc, 1913), *B. femoralis* (Foerster, 1848), *B. harrisoni* (Wagner, 1955), *B. modesta* (Foerster, 1848) and *B. reuteri* (Šulc, 1913). *B. lyrata* shares with these species the light colour of a large part of the antennal flagellum and long and apically narrow posterior lobes of male proctiger. A detailed phylogenetic analysis is, however, needed to confirm these relationships.

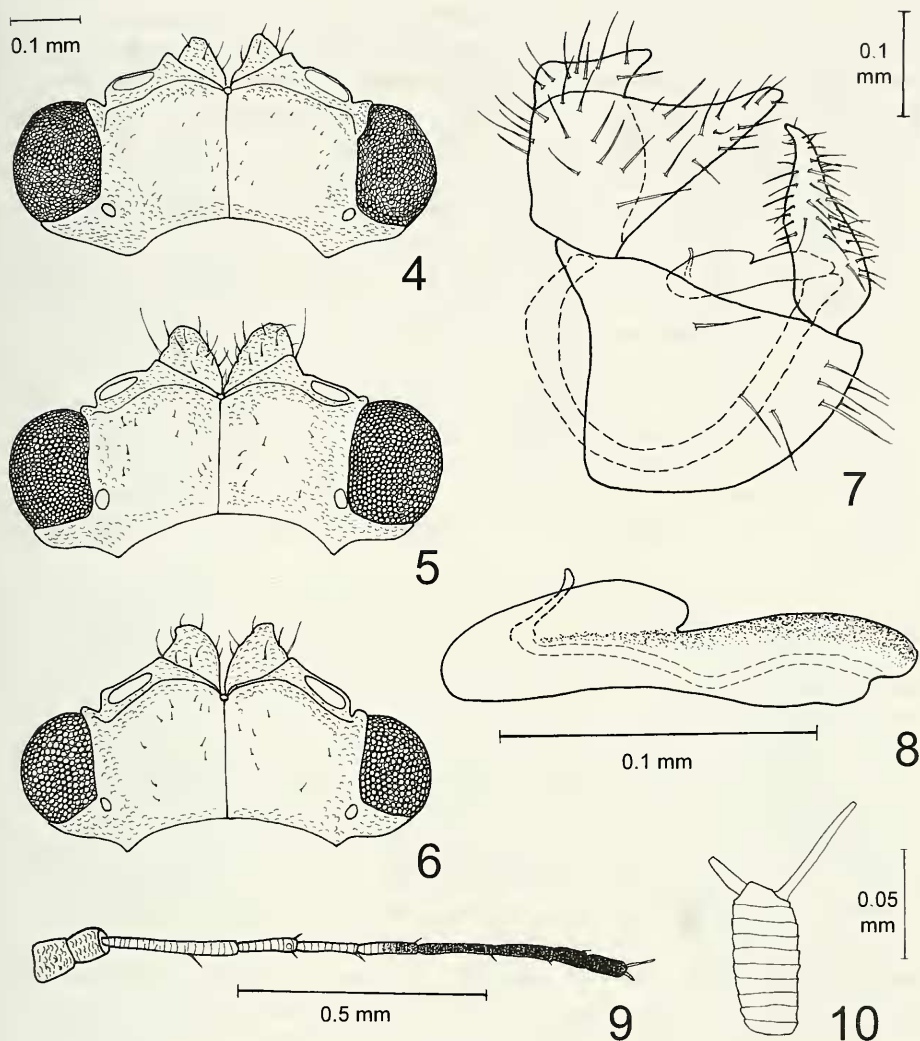
B. lyrata is similar to *B. reuteri* and *B. modesta* to which it might be closely related. *B. lyrata* shares with *B. reuteri* similarly shaped male and female terminalia (Figs 12, 15) but differs in the coloration of body and antenna, the shape, venation and spinulation of fore wing, the size of genital cones, and the details of male paramere. In *B. reuteri*, the body of summer generation is orange brown with extensive dark brown markings on head, thorax and abdomen to almost uniformly dark brown to black in overwintering specimens. Although there is some variation in the coloration of the antenna in both *B. reuteri* and *B. lyrata*, most specimens of *B. reuteri* have the antennal segments 3 to 7 white and the segments 8 to 10 dark brown to black (in some specimens, also the segment 7 is partly or entirely infuscated), compared to *B. lyrata*



FIGS 1-3

Bactericera spp.: fore wing (females distribution of surface spinules delimited by dashed lines). (1) *B. lyrata* sp. n. (2) *B. reuteri* (Šulc). (3) *B. modesta* (Foerster).

in which usually only the segments 3 to 6 are white and also the segment 6 is partly or entirely infuscated. Both species can be distinguished by the fore wing shape and venation. In *B. reuteri*, the fore wing is more rounded apically, relatively broader, the



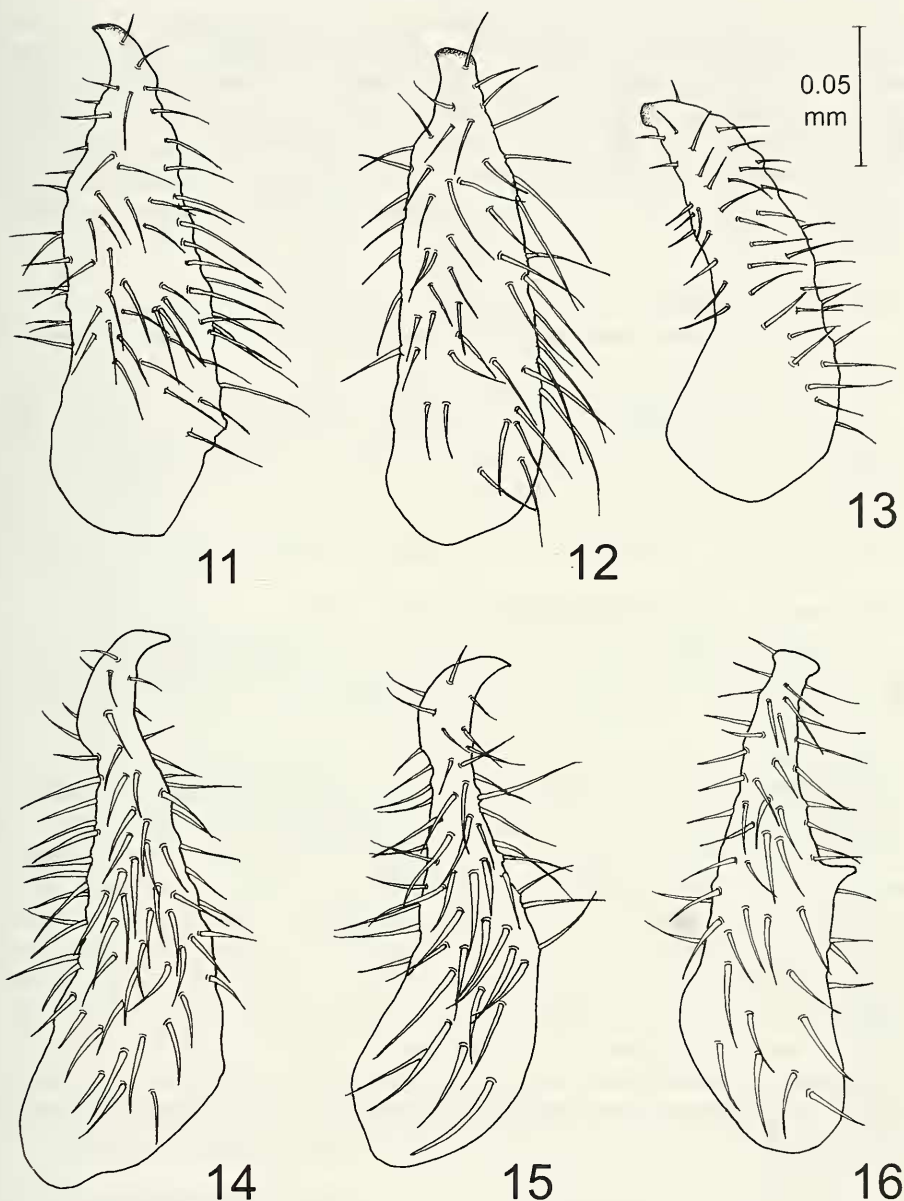
FIGS 4-10

Bactericera spp. (4-6) head in dorsal view (slide-mounted specimens). (7) male terminalia, in lateral view. (8) distal segment of aedeagus. (9) antenna. (10) antennal segment 10. (4, 7-10) *B. lyrata* sp. n. (5) *B. reuteri* (Šulc). (6) *B. modesta* (Foerster).

vein M is shorter, and the veins M_{1+2} and M_{3+4} are longer and subequal ($M_{1+2}L/WL \geq 0.17$; $M_{3+4}L/WL > 0.12$; $M_{1+2}L/M_{3+4}L < 1.4$; tabs. 1-2). Consequently, the vein Rs reaches the costal margin distinctly distally of the line of branching of the vein M and the cell m_1 is larger in *B. reuteri* compared to *B. lyrata* (Fig. 2). Surface spinulation on fore wing membrane is well distinct in the both sexes of *B. reuteri*. The distribution of surface spinules in the males of *B. reuteri* usually resembles the condition in the females of *B. lyrata* with spinule-free bands along veins (as figured by Ossianilsson, 1992, Fig. 997), whereas surface spinules extend over the entire mem-

brane of cells without leaving spinule-free bands along veins in females of *B. reuteri* (Fig. 2). The fore wing shape and spinulation seem to be independent on season as the same differences were observed in the both summer and overwintering generations of *B. reuteri* and *B. lyrata* (as well as *B. modesta* which is compared below). Furthermore, *B. reuteri* has larger genal cones ($GL=0.16-0.17$ mm, Fig. 5). Finally, the anterior margin of paramere, in lateral view, is less concave subapically in *B. reuteri* than in *B. lyrata* (Fig. 12). Further descriptions and illustrations of *B. reuteri* were provided by Šulc (1913), Klimaszewski (1975) and Ossiannilsson (1992). As already noted by Lauterer (1963), the description of *B. reuteri* by Doboreanu & Manolache (1962) refers to *B. harrisoni*. *B. reuteri* is a Palearctic species known from central and northern Europe, Russia and Mongolia (Gegechkori & Loginova, 1990). It is monophagous on *Potentilla anserina* (Lauterer, 1963; Ossiannilsson, 1992). *B. reuteri* has not been found in Slovenia so far. Our comparison is based on the following material of *B. reuteri*: syntypes (ex coll. Šulc, MMBC), Finland: 2♂, 1♀, Pargas, Reuter (1♂ dry-mounted, bodies of 1♂ and 1♀ on 1 slide, wings mounted separately on 3 slides); 1♂, 1♀, Kyrkslätt, Reuter (dry-mounted on 2 pins, terminalia of the female mounted on a slide); ca. 170 additional specimens collected in the Czech Republic and Slovakia (all in MMBC).

Both *B. modesta* and *B. lyrata* share a similar body coloration (seasonally dimorphic, with summer specimens vivid red or orange without distinct dark markings on head and thorax and overwintering generation dark brown to nearly black) and antenna (in *B. modesta*, the antennal segments 3–5 are white and segments 6–10 mostly entirely dark brown), and a similar fore wing shape (with acute apex and the vein Rs reaching costal margin more or less at the line of branching of the vein M). *B. modesta* can be differentiated from *B. lyrata* by the length of the vein M and the size of the cell m_1 on fore wings, the fore wing spinulation, the size of genal cones, and the shape of male and female terminalia. Despite some overlap in corresponding ratios (ML/WL , $M_{1+2}L/WL$ and $M_{3+4}L/WL$) between *B. lyrata* and *B. modesta*, the vein M is shorter, the veins M_{1+2} and M_{3+4} are longer and thus the cell m_1 is larger in *B. modesta* than in *B. lyrata* (tabs. 1–2, Fig. 3). The surface spinulation of the fore wing membrane is indistinct in the both sexes of *B. modesta*. The genal cones of *B. modesta* are larger than in *B. lyrata* ($GL=0.16-0.17$ mm, Fig. 6). The paramere of *B. modesta* is, in lateral view, strongly curved forwards (Fig. 13); in posterior view, it has a strong tooth in the middle of inner side and the apex is not tapering and is directed inwards, not outwards as in *B. lyrata* and *B. reuteri* (Fig. 16). The female terminalia of *B. modesta* are shorter than in *B. lyrata* and *B. reuteri* (Fig. 21). Detailed descriptions and additional illustrations of *B. modesta* were published by Šulc (1912), Conci & Tamanini (1986), and Burckhardt & Lauterer (1997). *B. modesta* is widely distributed in Europe, Russia, Kazakhstan, Central Asia and Mongolia (Gegechkori & Loginova, 1990) and has been recorded also from Slovenia (Seljak, 2006) where it has so far been found on more xerothermic habitats than *B. lyrata*. In the Czech Republic, however, *B. modesta* lives both in dry grassland where it develops on *Sanguisorba minor* and wet meadows where it is associated with *S. officinalis* as the host species (Lauterer, 1991; Burckhardt & Lauterer, 1997). We examined ca. 300 specimens of *B. modesta* from Bulgaria, Czech Republic, France, Germany, Slovakia and Slovenia (MMBC, GSNG).



FIGS 11-16

Bactericera spp. (11-13) paramere, in lateral view. (14-16) paramere, in posterior view. (11, 14) *B. lyrata* sp. n. (12, 15) *B. reuteri* (Šulc); 13, 16: *B. modesta* (Foerster).

***Cacopsylla nigrita* (Zetterstedt, 1828)**

MATERIAL EXAMINED. **Slovenia:** Mangart, 2050 m (UM94), 15 July 2006, on *Salix serpyllifolia* (1 ♂, 2 ♀).

This record in the extreme northwestern part of Slovenia is the first one for the country. The specimens were swept from a turf of dwarf willows at relatively high altitude. *C. nigrita* is known to feed on different species of willows and has so far been collected on *Salix caprea*, *S. lapponum*, *S. myrsinifolia* and *S. phylicifolia* (Lauterer & Burckhardt, 1997). *Salix serpyllifolia* thus might be an additional host species. An accidental drift of adults from lower altitudes, however, cannot be excluded. *C. nigrita* is widely distributed in central and northern Europe, Ukraine and Georgia (Lauterer & Burckhardt, 1997).

***Craspedolepta bulgarica* Klimaszewski, 1961**

MATERIAL EXAMINED. **Slovenia:** Branik-Golec (VL07), 8 June 2006, on *Achillea roseoalba* (1♂, 2♀).

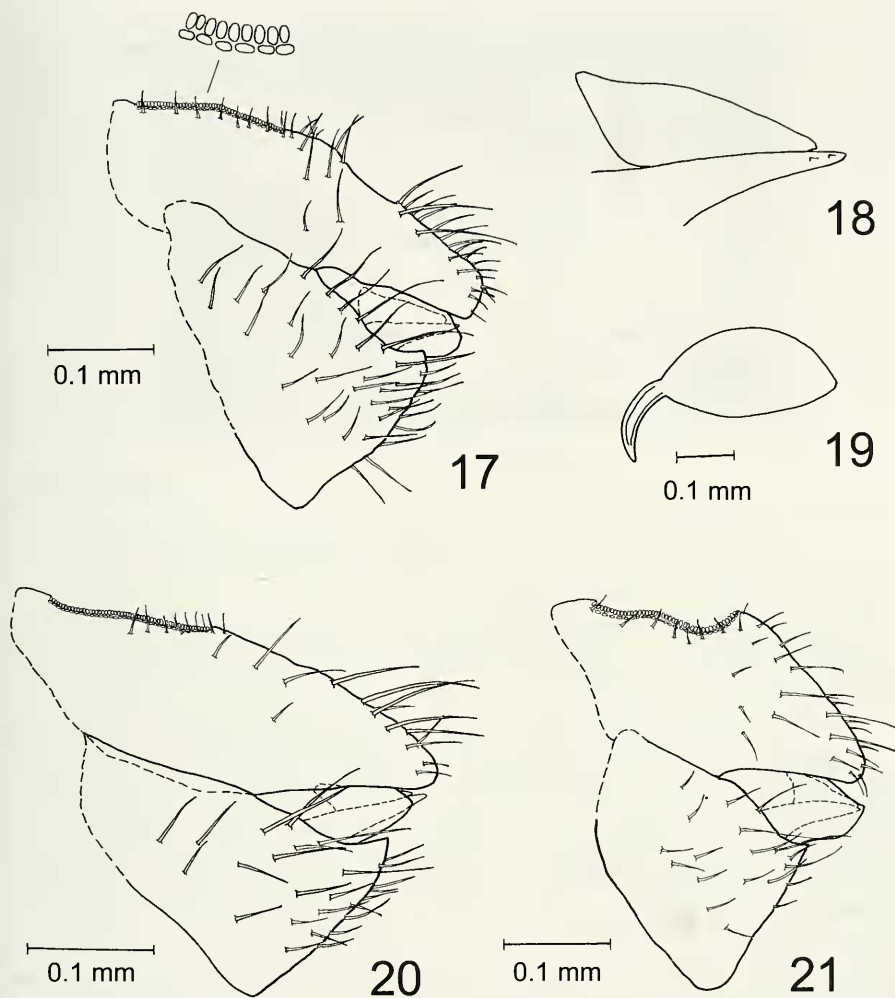
New species to the fauna of Slovenia. It has a Ponto-Mediterranean distribution, in Europe reaching the northernmost limit in the Czech Republic (Lauterer, 1993). The new finding in western Slovenia links the hitherto known distributional areas in Montenegro and central Italy (Lauterer, 1993; Conci *et al.*, 1993). A few specimens were collected in a floristically rich pasture with a lot of *Achillea roseoalba*. According to the literature the larvae live on roots of various *Achillea* spp. (Conci *et al.*, 1993).

***Megagonoscena gallicola* Burckhardt & Lauterer, 1989**

MATERIAL EXAMINED. **Slovenia:** Vale pri Brestovici (UL97), 19 May 2006 (2♂, 2♀); Lijak (VL09), 20 May 2006 (1♀) and 13 April 2007 (4 larvae); Solkan (UL99), 21 May 2006 (12♂, 21♀). **Croatia:** Červar-Porat (UL91), 30 April 2007 (5♂, 4♀, 6 larvae). **Italy:** Friuli-Venezia Giulia, S. Giovanni al Timavo (UL97), 19 May 2006 (28♂, 57♀).

M. gallicola has so far been known to occur in Bulgaria, Greece, Montenegro, Lebanon, Israel and Jordan (Burckhardt & Lauterer, 1989; Al Khawaldeh *et al.*, 1997; Zeidan-Gèze & Burckhardt, 1998; Souliotis & Tsourgianni, 2000). Our recent investigation has revealed that it is fairly frequent on *Pistacia terebinthus* also on temperate carstic slopes in south-western part of Slovenia. It was also collected above Monfalcone on the Italian side, as well as in Istria (Croatia). Thus the species is new for the fauna of Slovenia as well as Italy and Croatia. Its distribution extends almost certainly along the whole eastern Adriatic coast and most probably reaches here the northern- and westernmost limits. The records of *Agonoscena targionii* (Lichtenstein, 1874) by Janežič (1989) probably refer to *M. gallicola* for the following reasons: 1) Janežič mostly based his identifications on galls only, 2) *Agonoscena targionii* (as far as it is known) does not induce galls, 3) the description of *M. gallicola* was probably published only after Janežič finished his manuscript (Burckhardt & Lauterer, 1989; Seljak, 2006).

M. gallicola is associated with the genus *Pistacia* (*P. terebinthus*, *P. vera*, *P. palaestina*) and causes strong curling and deformations of leaves. Heavy infestations may seriously affect the foliage and shoot growth. It overwinters in the egg stage. According to Lauterer *et al.* (1998), *M. gallicola* has a single generation per year, with adults occurring from late April to early June. In Istria we could observe the fourth and fifth instar larvae on curled shoots of *Pistacia terebinthus*, many egg-laying adults on young leaves and freshly hatched larvae all together in late April and early May. Larvae produce abundant honeydew which attracts ants.



FIGS 17-21

Bactericera spp. (17, 20, 21) female terminalia, in lateral view. (18) dorsal valvula and apex of ventral valvula, in lateral view. (19) egg (dissected from female abdomen). (17-19) *B. lyrata* sp. n. (20) *B. reuteri* (Šulc). (21) *B. modesta* (Foerster).

Trioza abdominalis Flor, 1861

MATERIAL EXAMINED. **Slovenia:** Črni vrh nad Cerknem, 1270 m (VM21), 5 August 2007, on *Picea excelsa* (1♂, 1♀).

According to Conci *et al.* (1996), this is a common orophilous species, widely distributed from East Asia to North and Central Europe. In southern Europe its distribution is limited to higher altitudes. Its main host plant *Achillea millefolium* is not rare in Slovenia. Nevertheless, the above mentioned record is the first and so far the only known from the country.

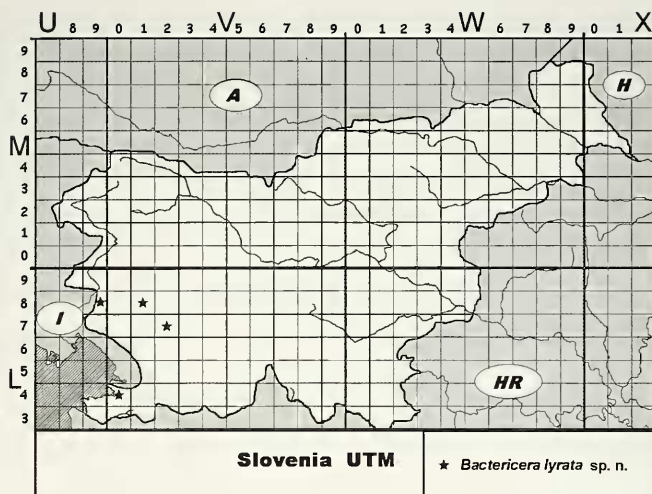


FIG. 22

Currently known distribution of *Bactericera lyrata* sp. n. in Slovenia.

Triozia ilicina (De Stefani Perez, 1901)

MATERIAL EXAMINED. Slovenia: Solkan, 200 m (UL99), 4 February 2007 (5 larvae) and 8 February 2008 (1 larva); Lijak, 290 m (VL09), 11 February 2007 (1 larva); Nova Gorica (UL98), 25 February 2007 (1 larva).

In the earlier overview of psyllids of Slovenia (Seljak, 2006) only the records made by Janežič could be cited (Janežič, 1989). Recently, several specimens of fifth instar larvae have been collected on leaves of *Quercus ilex* which allows an unambiguous confirmation of the presence of *T. ilicina* in Slovenia. A reliable differentiation from the closely related *T. remota* is much easier in the fifth instar larvae than in the adults (Conci & Tamanini, 1985). Further, *T. ilicina* has a different life history. It overwinters in the larval stage and adults appear in April and May, while *T. remota* overwinters as adults (Conci & Tamanini, 1985). In 2007, fifth instar larvae of *T. ilicina* were collected in Slovenia as early as in February. They cause pit galls on the lower leaf surface of *Quercus ilex*. *T. ilicina* is a Mediterranean species so far recorded from the Balearic Islands, France (including Corsica), Italy (including Sicily and Sardinia), and Turkey (Conci & Tamanini, 1985; Burckhardt & Önuçar, 1993; Conci *et al.*, 1996).

Triozia laserpitii Burckhardt & Lauterer, 1982

MATERIAL EXAMINED. Slovenia: Cimproverka, 1258 m (VM21), 24 June 2006, on *Laserpitium siler* (2♀).

First record in Slovenia. Despite an extensive population of the host plant, only a few specimens could be collected so far. *T. laserpitii* is distributed in the Alps, the Carpathians and Fennoscandia (Burckhardt, 1986; Ossiannilsson, 1992).

Triozia megacerca Burckhardt, 1983

MATERIAL EXAMINED. Slovenia: Mlinarjevo sedlo, 1300 m (VM63), 15 August 2007, on *Picea excelsa* (2♀); Rebrnice, 520 m (VL26), 20 September 2007, on *Juniperus communis* (12♂, 13♀); Baske, 600 m (UL99), 20 October 2007, on *Juniperus communis* (2♀).

The type locality of *T. megacerca* is near Rovinj in Istria (Croatia) (Burckhardt, 1983). Obviously it is a South European species having been recorded also from Bulgaria, Italy, Slovakia and Switzerland (Burckhardt, 1983; Conci *et al.*, 1996; Lauterer & Malenovský, 2002), and newly also from Slovenia. As in the case of the type population, also here the specimens were mostly swept before overwintering from isolated bushes of *Juniperus communis* scattered over meadows. *T. megacerca* belongs to a trioqid species group closely associated with plants of the tribe Lactuceae (Asteraceae) but its exact host plant remains unknown.

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